

## TYPE DESIGNATIONS AND SYNONYMIES FOR NORTH AMERICAN SILPHIDAE (COLEOPTERA)

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The purpose of this paper is to provide type data and lectotype and neotype designations for North American Silphidae described by J. L. LeConte, Thomas Say, M. H. Hatch, and J. W. Angell, and new synonymies of other species. We are engaged in ongoing revisionary work on North American silphids (e.g. Miller and Peck, 1979) and have found considerable nomenclatural confusion because of varying interpretations of poor descriptions and names not fixed to types. Publication of these data is also necessary for their inclusion in the forthcoming fascicle on this family in "A Catalog of the Coleoptera of America North of Mexico", U.S. Dept. Agric. Handbook 529 (J. M. Kingsolver, editor-in-chief). Improved identification keys and characterizations of all United States and Canadian silphids are given in Peck (1982a).

In the LeConte and Horn collections of the Museum of Comparative Zoology (MCZ), Harvard University, the specimens that bear "type" labels have not been formally validated, and these were placed on the assumed types (supposedly the first in each series) during routine curation early in this century. The Say neotypes were selected from the LeConte collection because it is generally agreed that the original Say material is lost, and that LeConte had the opportunity to compare his specimens with those in Say's collection (see Lindroth and Freitag, 1969; Miller and Peck, 1979). The specimens designated do not differ in characters from the original published descriptions.

Primary types from the Hatch collection have been deposited by Oregon State University in the United States National Museum of Natural History (USNM).

Types have recently been designated for *Silpha aenescens* Casey, *Silpha ramosa* Say, *Agyrtes longulus* LeConte, and *Necrophilus petteitii* Horn (Miller and Peck, 1979; Peck, 1974 and 1982b).

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Herman (1964) has shown that the correct spelling of the genus of the sexton or burying beetles is *Nicrophorus* Fabricius, 1775, and not *Necrophorus* Thunberg, 1789 (see Madge, 1980).

#### TYPE SPECIMENS OF NOMINAL SPECIES

*Nicrophorus lunatus* LeConte 1853: 277. LECTOTYPE (here designated), a male with a yellow disc and a red square label with white dorsal margin "Type 3144" and white label "N. sayi Lap/lunatus Lec.," and our designation label, in MCZ. The yellow circle in LeConte's code is supposed to mean "Central Valley or Western States (Ohio, Illinois, Indiana, Missouri, Western Tennessee, Kentucky, Iowa, and southern Great Lakes)". However, the species localities were published by LeConte as New York and Georgia. The name is a junior synonym of *Nicrophorus sayi* Laporte, 1840; and a junior homonym of *Nicrophorus lunatus* Fischer, 1842, of Eurasia. Harold (1868) supplied *Nicrophorus luniger* as a replacement name for *Nicrophorus lunatus* LeConte.

*Nicrophorus confossor* LeConte 1854: 20. Described from a single specimen, the HOLOTYPE: a male with a dark blue disc (indicating Oregon and Washington), and a red square label with white dorsal margin "Type 3146" and white label "N. confossor/Cooper Lec.," and white label "maratimus 4", in MCZ. The published type locality is Prairie Paso, which is in Washington. The species is a synonym of *Nicrophorus investigator* Zetterstedt, 1824.

*Nicrophorus pollinator* LeConte 1854: 19. LECTOTYPE (here designated) a male with dark blue disc (meaning Oregon and Washington), red label with white dorsal margin "Type 3145", white label "N. pollinator/Cooper Lec.", white label "vespilloides 9", and our designation label, in MCZ. Accompanied by male paralectotype with blue disc, red label with white dorsal margin "Type/2/3145" and white label "vespilloides 10" and male paralectotype with blue disc and red label with white dorsal margin "Type/2/3145" and white label "vespilloides 11", both in MCZ. The published distribution is from Fort Vancouver to the Yokolt Plain. The species is a synonym of *Nicrophorus defodiens* Mannerheim, 1846, and a junior homonym of *Nicrophorus pollinator* Mannerheim, 1853 (which is a synonym of *Nicrophorus investigator* Zetterstedt, 1824).

*Necrophorus orbicollis* Say 1825: 177. NEOTYPE (here designated), a male in LeConte collection with white label "N. orbicollis/Say/Hallii Kirby", and our designation label, in MCZ. Published localities are from "the N.W. Territory" (which at the time meant Ohio, Indiana, Illinois, Wisconsin, and Michigan), and "very rare in the Middle States", and "one specimen from Dr. T. W. Harris of Milton, Massachusetts". The Harris collection is preserved in the MCZ and was examined but no specimens of the species were found that would help to validate Say's species concept.

*Necrophorus hecate immaculosis* Hatch 1957: 15. The name was validated by this use as a subspecies, not by its earlier use as an aberration (Hatch 1927: 362) according to Article 10b of the ICZN. The holotype, which we have not seen, is a specimen from "California" in the Institut für Pflanzenschutzforschung Zweigstelle Eberswalde, East Berlin (formerly Deutsches Entomologisches Institut). Our examination of much west coast material (and unpublished data of R.S. Anderson) shows that *immaculosis* represents part of a range of variation in elytral patterning within *N. hecate* Bland 1865, and, furthermore, that *hecate* represents a portion of variation within *N. guttula* Motschoulsky 1845. We therefore propose *immaculosis* as a NEW SYNONYM of *hecate*, and *hecate* as a NEW SYNONYM of *guttula*.

*Necrophorus maritimus* Eschscholtz, in Guerin-Meneville 1835, Iconographie, plate 17, fig. 8. This name was last used by Hatch (1957: 14) as *Necrophorus investigator maritimus*, for material mostly from coastal islands of British Columbia with reduced elytral fascia. It was originally described from Sitcha Island, Alaska, but we have not seen authentic type material. Our examination (and unpublished data of R. S. Anderson) of much west coast material shows this to be one part of variation, which is not geographically coherent, of *N. investigator* Zetterstedt 1824, and we therefore propose *maritimus* as a NEW SYNONYM.

*Necrophorus grandior* Angell 1912: 307. LECTOTYPE (here designated), a male with labels "California", "Janson", "Original/type", "Necrophorus / grandior / Angell", "Necrophorus / grandior / 2917 Ang./Det. M. H. Hatch 1925", "Necrophorus/germanicus/ab. bipunctatus/♂ Kr./M. H. Hatch-1926" and our designation label, in USNM. Hatch (1927) cited this as the "type" (holotype), but it was published as a syntype. The species is a synonym of *Nicro-*

*phorus germanicus* (Linnaeus), 1758. The location of the second syntype, a specimen of *N. humator* (Gleditsch) 1767 (according to Hatch 1927) is unknown. It is not in the Hatch collection at Oregon State University (G. L. Peters, pers. comm.).

*Silpha truncata* Say 1823: 193. NEOTYPE (here designated), a male with dark green disc (meaning New Mexico) and white label "S. truncata Say.", and our designation label, in MCZ. The published locality is "Arkansa" and "near the Rocky Mountains", which we take to mean the upper reaches of the Arkansas River in eastern Colorado. Say collected the single specimen while he was a naturalist on Major Long's 1819 party exploring the upper reaches of the Platte, Arkansas, Canadian, and Red Rivers, of the southern Great Plains and foothills of the Rockies (Weiss and Ziegler, 1931). The species is now *Thanatophilus truncatus* (Say).

*Silpha bituberosa* LeConte 1859b: 6. Described from a single specimen, the HOLOTYPE: a female with pale green disc (meaning Nebraska, Kansas, North Dakota, South Dakota, Oklahoma, Colorado, Wyoming, and Montana), and red label with white dorsal margin "Type 8952" and white label "S. bituberosa/Drexler Lec.", in MCZ. The published type locality is "near Fort Bridger", now in SW Wyoming. The species is now in the genus *Aclypea* (in some literature as *Blitophaga*), but the former name is given priority, following Seidlitz (1888: 311) as the first reviser in accordance with article 24 (a) (i) of the International Code of Zoological Nomenclature.

*Silpha caudata* Say 1823: 192. The species was described from material collected by Thomas Nuttall "on the upper Missouri" River and by Say from "near the Rocky Mountains." LeConte (1859c) recognized this species as a synonym of *Silpha lapponica* Herbst, now *Thanatophilus lapponicus* (Herbst), and this has been accepted ever since. We do not designate a neotype for this name, for it is not necessary in the interests of stability of nomenclature.

*Necrophilus tenuicornis* LeConte 1859a: 84. Described from a single specimen, the HOLOTYPE: a female with dark blue disc (meaning Oregon and Washington), and red label with white dorsal margin "Type 3147" and white label "N. tenuicornis/P. Sound Lec." and white label "Pt./tenuicorne/(Lec)". in MCZ. The published type locality is Puget Sound, Washington. The species is now *Apteroloma tenuicorne* (LeConte).

## NEW SUBGENERIC SYNONYMY

Our studies, as well as those of R. S. Anderson, R. B. Madge, and A. F. Newton (all unpublished), have not provided data to support retention of the monotypic subgenus *Necrocharis* Portevin 1923 for *Nicrophorus carolinus* (Linnaeus 1771). Therefore we consider *Necrocharis* a NEW SYNONYM of *Nicrophorus* Fabricius 1775.

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